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ABSTRACT

This booklet on economics is one of a series in environmental education for grades K-12. The activities in this booklet are concerned with the relationship of the standard of living to the level of technology and economic system developed by a society. The role of economics in determining environmental quality is also assessed. Three basic concepts are listed, along with behavioral objectives, subject areas, key words, and definitions for each. Three activity options are given under the basic concepts. Information for these activities includes materials and resources, procedures, discussion questions, further activities, and sample worksheets. The activities are interdisciplinary and designed for students in grades 6-8. (MA)

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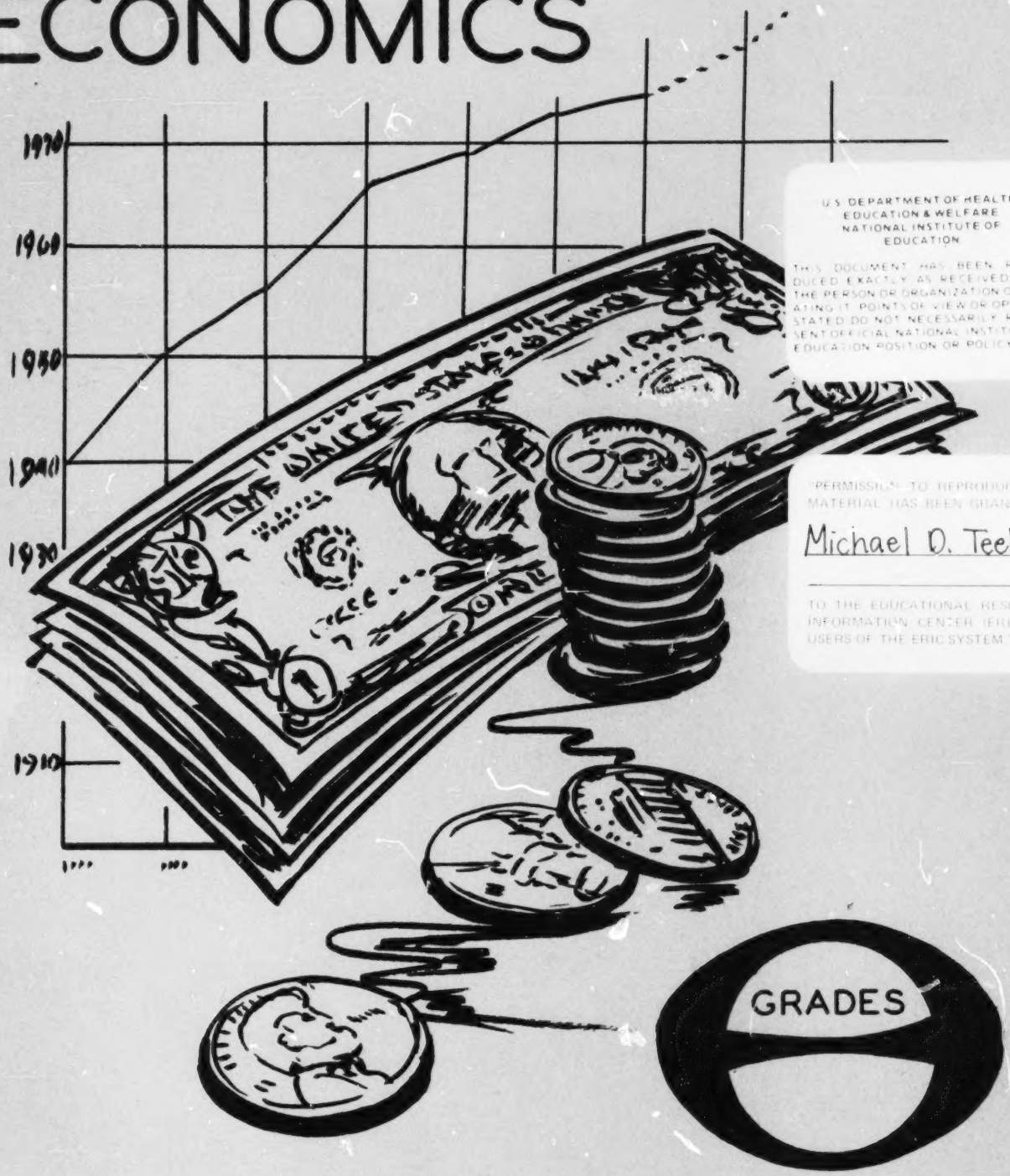
# ECONOMICS

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# ENVIRONMENTAL EDUCATION

VALUES FOR THE FUTURE

ANTIOCH COMMUNITY SCHOOL DISTRICT 34

TITLE IVC ESEA



SE 023 454

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Synopsis

Economics 7 - At the completion of this unit the student will be able to explain through discussion and/or writing how the amount of goods a society produces is directly related to a society's knowledge of technology.

Option 1 - The students through simulation will work out an economic problem with various degrees of technological knowledge. .. 3
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Economics 9 - At the completion of this unit the student will be able to identify his own economic goals and how they affect his immediate environment.

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Option 2 - Students identify objects they use in their every day life and the resources needed to produce and use them. ..26
Option 3 - By filmstrip, the students analyze the environment problems in other countries and relate them to economic goals. ..28

EXPLANATION OF CONCEPT AREA

ECONOMICS - To develop a good understanding of the decisions that will be made concerning our environment we must understand some basic economics.

We begin the study of economics with the identification of sources of money and how it is distributed. The concrete facts of money as it relates to our daily lives.

These are further developed into an understanding of wages being a result of work and the importance of man's use for resources. We then develop the basics of supply and demand by examining the role advertising and its importance to demand.

In grades 6-8 we explore the standard of living in relation to the level of technology and economic system developed by the society. This knowledge is then expanded to assess the role of economics in determining environmental quality.

In high school we explore economic systems, levels of benefits, and the use of the cost/benefit equation to assess the merit of technology in modifying the environmental quality.

BEHAVIORAL OBJECTIVE:

At the completion of this unit the student through discussion and/or writing will explain how the amount of goods a society produces is directly related to a society's knowledge of technology.

SUBJECT AREAS:

Social Studies, Mathematics

KEY WORDS AND DEFINITIONS:

Technology - the sum of the ways in which a social group provide themselves with the material objects of their civilization

Gross National Product - the total monetary value of all final goods and services produced in a country during one year

OPTION #1

MATERIALS AND RESOURCES

Four letter sets of the following word PALEOANTHROPOLOGIST (This could be any multi-syllabic word that the students do not know.)

Four instruction cards

PROCEDURE:

1. Divide the class into four groups and have them separate into four corners of the room.

2. Explain that you as the "super consumer" would like the group to produce a word product that you need. As an additional incentive pour a bag of candy in the middle of the room to be your payment for the group with the most word products.

3. Explain that you will only accept the one word you want to buy. If groups come up with any other words, other than PALEOANTHROPOLOGIST, it's wrong!

4. Give each group a packet of letters and one of the four instruction cards. Have the students begin to make the word product. Continue to inform the class the progress of each group. This helps to raise the level of frustration. Remember - each instruction card represents a hypothetical countries' level of technology.

5. Once the groups have formed their word, have them continue writing the word out on paper. The more words the better; thus earning more money like piece work on an assembly line.

6. Continue the exercise for one fourth to one half of the class period.

7. Make list of the number of products on the blackboard.

DISCUSSION QUESTIONS

1. Which group had the most products?

2. Why did one group have more than the other?

3. Look at the middle groups. Have them read their instructions. Is there a relationship between the instructions and the amount of production?

4. If each group represented a country which one might it represent? Have the groups speculate.

5. Does the United States represent the most production? What are some of the less productive countries?

6. Discussion should be open ended; many things will emerge. Students will bring up the concept of fairness. Use that concept to discuss the worldwide utilization of natural resources.

OPTION #1 cont.

7. Why does the United States produce more than other countries?

8. Is there a relationship between the amount of products produced and environmental quality?

FURTHER ACTIVITIES

Have the students list the countries on the blackboard that represent each of the four groups. Have the students research these countries, their national resources and their gross national product(s). See option #3.

OPTION # 1

LETTER SET

5

OPTION #1 INSTRUCTION CARDS

| | |
|---|---|
| #1 - THIS IS YOUR LEVEL OF TECHNOLOGICAL KNOWLEDGE. PLEASE USE TO MAKE YOUR WORD PRODUCT.<br><br>Put these letters together in a nineteen letter word. | #2 - THIS IS YOUR LEVEL OF TECHNOLOGICAL KNOWLEDGE. PLEASE USE TO MAKE YOUR WORD PRODUCT<br><br>A belongs in the 2nd place.<br>E belongs in the 4th place.<br>A belongs in the 6th place.<br>T belongs in the 8th place.<br>R belongs in the 10th place.<br>P belongs in the 12th place.<br>L belongs in the 14th place. |

| | |
|---|---|
| #3 - THIS IS YOUR LEVEL OF TECHNOLOGICAL KNOWLEDGE. PLEASE USE TO MAKE YOUR WORD PRODUCT.<br><br>Fill in the missing letters to make your word product.<br>P _ L E _ A N T _ R O P _ L _<br>G _ _ T | #4 - THIS IS YOUR LEVEL OF TECHNOLOGICAL KNOWLEDGE. PLEASE USE TO MAKE YOUR WORD PRODUCT.<br><br>Arrange the letters in the following way:<br>P A L E O A N T H R O P O L O<br>G I S T |

OPTION #2 - Begin this option in the fall.

MATERIALS AND RESOURCES

Writing paper and envelopes
World map and pins
Addresses of different consulates such as West Germany, Australia, Kenya, Spain, Tanzania, South Africa, India, and Japan - These are listed in the Chicago Telephone Directory. As an alternative, the World Almanac section under the heading "Nations" provides a great deal of information.

PROCEDURE: NOTE: This option is designed as a very long term unit. It may take months to obtain results but it pays off once the information comes in. The procedure outlined below is only one method possible to facilitate a world geography unit. The teacher could wait until a substantial amount of information is received before having the groups report their results. Each individual student could be required to send mailings to a number of countries on file and individually report. Whatever the vehicle used the class should gather the information that will lead to the objective.

1. Divide the class into groups, each group representing a country. The number of groups will be dependent upon the number of countries you choose to use.

2. Have each group locate their country on the map and illustrate its position to the class.

3. For a better understanding of World Geography, have the students construct a large world map suitable for covering a large portion of one wall. Have them place a pin or marker on the map.

4. Have each group write a letter or send Form A to the various consulates to gather information about the following:

   a. percent of industrialization

   b. five largest number of products produced

   c. average income (monetary value)

   d. twenty to forty year predictions of industrialization

   e. any governmental agencies that deal directly with environmental quality

   f. gross national product

   g. total population

   h. number of people in the work force

   i. significant technology

   j. number of universities and student population

OPTION #2 cont.

5. As the letters are returned, mark the map accordingly. Have each group report to the class on the above areas.

6. Ask the students to speculate on the future of the countries based upon the information gathered.

7. Make a list of developed nations and developing nations.

DISCUSSION QUESTIONS

1. How do the goals of the industrialized nations differ from the developing nations? Explain.

2. At any time in our history could the United States have had goals like the developing nations? Explain.

3. At this point what countries have the highest environmental quality? Explain.

4. Which countries are trying to solve environmental problems already created?

5. Which countries are trying to prevent environmental problems?

6. Is the United States an industrialized nation?

7. Have the United States' economic goals created a poor environment? Explain.

8. In what ways is the United States trying to solve the environmental problems created in the past?

9. How have the economic goals of the United States changed to prevent environmental problems?

10. Does the environmental quality of the country have anything to do with economic goals?

OPTION #2 FORM A

Gentlemen:

I am an American student seeking information about your country. If you could answer any number of the following questions, it would be greatly appreciated.

In addition, if you have any other information that would develop a greater understanding of your country, please forward.

1. What is the population of your country?
2. How many universities does your country have? What is the student enrollment?
3. What is the average income of your people?
4. What are the five largest number of products produced?
5. What is the percent of industrialization?
6. What are the future predictions of industrialization?
7. What is your country's gross national product?
8. How many people are in the work force?
9. Are there any governmental agencies that deal directly with environmental concerns?
10. What is your most significant technological advancement?

Thank you for your assistance.

Sincerely,

OPTION #3

MATERIALS AND RESOURCES

Invention reference sheet
Reference materials

PROCEDURE:

1. Students will be assigned one or more inventions from the list below. (Others may be used depending upon the students' research abilities and background.)

2. The students will research their invention(s) and complete the chart below.

3. Discuss and compare the environmental costs of progress through invention.

DISCUSSION QUESTIONS

1. In researching inventions does one country stand out above the others? Why do you think this might be?

2. How might technical ability be measured?

3. Is the growth of technology ever in spurts? Why?

4. What natural resources are most used by the invention you researched?

5. Do you feel that your invention is more of a help or a detriment to mankind?

6. When a country invents something, does it affect other countries? Why? Why not?

7. Why is the impact greater in one than in another?

INVENTION LIST

| | | |
|---|---|---|
| Printing press | Auto | Airplane |
| Internal Combustion Engine | Television | Radio |
| Telephone | Light bulb | Sewing machine |
| Record player | Still camera | Motion picture camera |
| Electric motor | | |

OPTION #3

# INVENTION RESEARCH CHART

| |
|---|
| INVENTION |
| INVENTOR |
| COUNTRY |
| YEAR |
| BENEFITS TO MAN |
| LOSS TO THE ENVIRONMENT |
| OTHER DETAILS |

## INVENTIONS

| 1900-1930 | 1930-1950 | 1950-PRESENT |
|---|---|---|
| 1903 powered airplane | 1930 jet propelled aircraft | 1950 hydrogen bomb |
| 1907 helicopter | 1935 fluorescent light | 1952 polio vaccine |
| 1909 electric self-starter for autos | 1937 xerography | 1955 transoceanic cable |
| 1909 motion picture camera and projector | 1939 atomic bomb | 1955 IBM electrical machine |
| 1913 x-ray tubes | 1940 dacron | 1956 atomic power station for production of electricity |
| 1915 transatlantic telephone calls | 1943 aqualung | 1957 Sputnik I |
| 1918 hydraulic four-wheel brake system | 1946 electronic digital computer | 1958 satellite Vanguard rockets |
| 1924 radar | 1946 general purpose relay calculator | 1950's artificial organs |
| 1924 rayon | 1948 transistor | 1960 laser beam |
| 1926 liquid fuel rocket | 1948 Polaroid | 1968 supersonic transport |
| 1928 pencillin | 1948 teflon | 1971 lunar Rover |

## FUTURE HOPES

Drug control and change of personality characteristics such as anxiety and aggressiveness

Cheap and clean electrical power from thermonuclear plants

Mass economic fertility control agents in water and food

Corporate employment at home via improved communications

Major world cities linked by high-speed ground, rail, and air vehicles

Increased world agricultural production

Drugs to raise intelligence levels

Comprehending computers with IQ's of 150

Construction of cities underground or underwater

Chemical control over hereditary defects by gene modification

Effective regional weather control at acceptable costs

ECONOMICS 8

BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will be able to list the components of an economic system.

SUBJECT AREAS:

Social Studies, Science

OPTION #1 - two days

MATERIALS AND RESOURCES

Poster board and magic markers
Production cards
Tape recorder

PROCEDURE:

Students will be producing a car following the basic components of an economic system. There are many variables throughout the system; therefore, a realistic economic situation is created.

1. Divide the class into groups of four.
2. Each group will have two production executives and two advertising executives.
3. Set the room up so there is a flow to the student's movements. See chart 1.
4. Have the production executives move from table to table. Their goal is to produce a car that someone would like to purchase.
5. The advertising executives should proceed directly to the marketing table to determine the type of advertising needed. They have a budget of $850. They may spend it all. Anything not spent is clear profit.
6. Have the production executives record each cost as they move from table to table. See Chart 2, cost sheet.
7. Have the advertising team, based on marketing decisions, develop ads.
8. The first day should end as production people have added up costs and the advertising people have begun to plan advertising.
9. The second day should begin by completing the ads.
10. The groups should present the ads to the class. Include the cost of the car.
11. After each group has presented their ads, ask for a show of hands on which car they will purchase. Each hand should count for five cars sold.
12. Have the groups add up the total cars sold and determine the total profit.
13. Open for discussion.

PTION #1 cont.

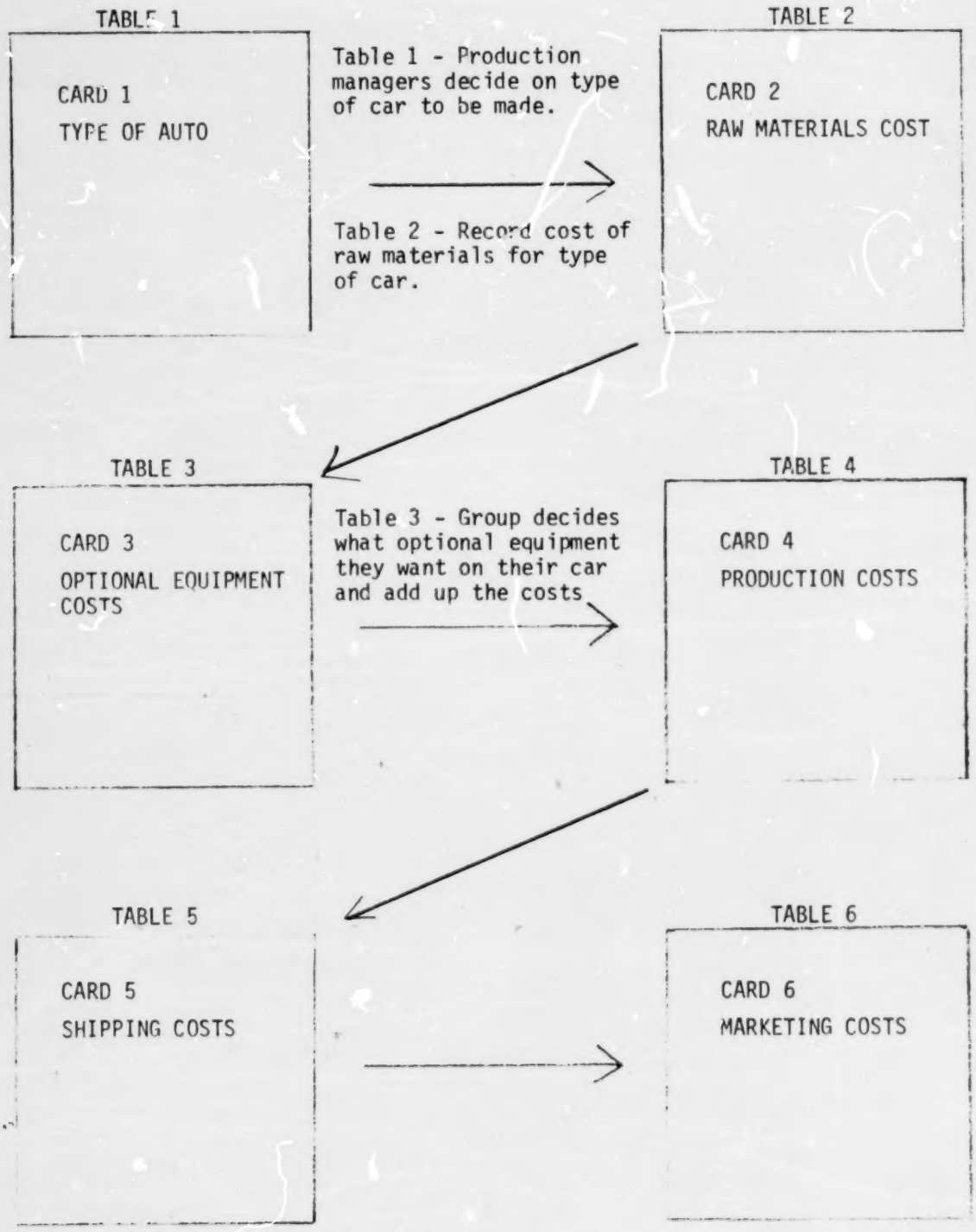
DISCUSSION QUESTIONS

1. Identify the components of the economic system.
2. Is there any component that is not needed?
3. What is the most important component? At this point the teacher should lead the discussion into the individual consumer as part of the system.
4. How can one individual make a difference? Or can he?
5. What other components are there that we haven't mentioned?
6. Do you think most people think of themselves as part of an economic system?
7. When a group is on strike, how does this affect the economic system?
8. If steel workers were on strike, how could this affect the auto manufacturers? The rubber industry? The plastics industry?

OPTION #1

# CHART 1

Room Set-up and Procedure



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OPTION #1

## CARD 1

Decide what type of car you want and record your choice by letter on the cost sheet.

a. SPORTS CAR

b. MID-SIZE CAR

c. FULL-SIZE CAR

## CARD 2

Add up the total cost by recording each cost according to your type of car.

RUBBER a. $100 b.& c. $175

GLASS a. $250 b.& c. $350

PLASTIC a. b. & c. $300

METAL a. $3000 b. $3500
c. $4000

## CARD 3

Decide which optional equipment you think would help sell your car. Record costs on cost sheet.

| | |
|---|---|
| radio | $150 |
| air-conditioning | $450 |
| eight-track | $150 |
| bucket seats | $200 |
| auto transmission | $250 |
| white walls | $ 60 |
| extra chorme | $ 75 |
| leather upholstery | $180 |

## CARD 4

Add up the number of options and record the cost of the appropriate labor.

1. NO OPTIONS $300

2. 1-2 OPTIONS $400

3. 3-5 OPTIONS $500

4. 6-8 OPTIONS $600

## CARD 5

Record shipping costs on cost sheet.

TYPE A. $150

TYPE B. $175

TYPE C. $200

## CARD 6

Decide on the type of advertising you want. You have budgeted $850. Anything not used will be added to the final profit.

One-minute visual advertising on television - $500

One one-minute taped advertising on radio - $250

One printed poster - $100

One of each of the above - $850

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OPTION #1 COST SHEET

TYPE OF CAR - A, B, or C

RAW MATERIALS COSTS
- RUBBER
- GLASS
- PLASTIC
- METAL

OPTIONAL EQUIPMENT
- RADIO
- AIR-CONDITIONING
- 8-TRACK
- BUCKET SEATS
- AUTOMATIC TRANSMISSION
- WHITE WALLS
- EXTRA CHROME
- LEATHER UPHOLSTERY

PRODUCTION COSTS OR LABOR
- NO OPTIONS
- 1-2 OPTIONS
- 3-5 OPTIONS
- 6-8 OPTIONS

SHIPPING COSTS - A, B, or C

MARKETING COSTS OR ADVERTISING

SUBTOTAL
PROFIT MARGIN OF 15%
TOTAL PRICE OF CAR

PRODUCTION COST____SELLING PRICE____PROFIT

TOTAL CARS SOLD
TOTAL PROFIT

OPTION #2

MATERIALS AND RESOURCES

Chart I

PROCEDURE:

1. Explain the terms in Chart I to the students.
2. Discuss the relationship of each of the four items.
3. Have the students individually fill out Chart I at home with the help of their parents.
4. Once the charts are completed have the students discuss their charts with the class. In particular, discuss the value (in money) and the amount of each of the items.

DISCUSSION QUESTIONS

1. Why are the charts of each student different?
2. What could cause a change in the items listed?
3. How does supply and demand (amount and cost) affect the list?

CHART DEFINITIONS

Raw Materials - the items in a household such as food, electric, gas, the structure, etc.

Producers - who maintains the household

Consumers - who makes use of the household, the services, and the materials

Products - what is made in a household such as meals, raising of children, family lifestyle

OPTION #2 CHART I

RAW MATERIALS:

PRODUCERS:

CONSUMERS:

PRODUCTS:

OPTION #3 - NOTE: This unit is to be used in conjunction with a biology unit.

MATERIALS AND RESOURCES

Chart I from Option #2
Biology text or science book dealing with the human body
Film or filmstrip on digestion and breathing

PROCEDURE:

1. Explain the items on Chart I.

2. Show a film/filmstrip on digestion and breathing.

3. Have the students classify the body parts, food, etc. according to Chart I.

   a. Raw materials - oxygen, food, starches, fats, minerals, vitamins, protein, carbohydrates

   b. Products - energy, amino acids, fatty acids

   c. Producers - digestive glands

   d. Consumers - muscles, body cells

   e. Transportation - blood, ATP

   f. Byproducts and waste materials - $CO_2$, urine, solid waste

   g. Maintenance - white blood cells, liver, kidney, lymph glands

   h. Production rate control - basil metabolism

DISCUSSION QUESTIONS

1. Where does the body get its raw materials?

2. Where does a factory get its raw materials?

3. What is the purpose of the body factory?

4. What is the purpose of a business factory?

5. Can some of the by-products harm the system?

6. Can the body system over produce? What?

7. What is the result of this over production? (cutback on raw material purchase and cutback on production)

8. How does the altering of one aspect of the body's economic system, amount of raw materials for example, affect the other aspects of the system?

OPTION #3 cont.

9. Discuss the results of the following changes in the economic systems of the body.

   a. Altered sugar production (diabetes)

   b. Altered production rate

   c. Elimination of a raw materials (loss of particular vitamins or minerals, proteins, etc.)

   d. Change in demand by consumers, either up or down

   e. Loss of maintenance of quality

ECONOMICS 9

BEHAVIORAL OBJECTIVE:

At the completion of this unit the student will be able to identify some of his economic goals (values) and how they affect his immediate environment.

SUBJECT AREAS:

Social Studies, Science, English

OPTION #1

MATERIALS AND RESOURCES

Chart I

PROCEDURE:

1. Distribute Chart I and have the students complete Part I in class and Parts II and III at home.
2. Discuss the lists and compare needs.
3. Discuss what is necessary for existence as compared to a comfortable life.
4. Discuss which of our needs has an effect on our environment and what the effects are.
5. Have the students write a short paper describing their economic goals for the near future.

DISCUSSION QUESTIONS

1. What things do you really need to exist?
2. What do you feel you would want if you had all the money you desired?
3. What differences did you notice wher we compared our first lists in class?
4. What differences did you find between your list and your family's list?
5. Can you name the underlying factors that determine wants?

# CHART I

1. LIST TEN THINGS SUCH AS AUTOMOBILE, VACATION, ETC. WHICH YOU FEEL ARE AN IMPORTANT PART OF YOUR LIFE.

| | |
|---|---|
| 1. | 6. |
| 2. | 7. |
| 3. | 8. |
| 4. | 9. |
| 5. | 10. |

2. LIST TEN THINGS YOUR FAMILY FEELS ARE IMPORTANT TO THEIR LIFE.

| | |
|---|---|
| 1. | 6. |
| 2. | 7. |
| 3. | 8. |
| 4. | 9. |
| 5. | 10. |

3. CHECK OFF THOSE ITEMS YOU FEEL ARE <u>NECESSARY</u> TO YOUR LIFE.

OPTION #2

MATERIALS AND RESOURCES

Chart II

PROCEDURE:

1. Have the students identify several objects they use in everyday life to make things comfortable or for entertainment.

2. Using Chart II have the students identify what resources are needed for each item and what effect each has on the environment.

3. Have the students write a descriptive paper about their lifestyle dealing with the following:

   a. how they occupy their free time
   b. what leisure activities they enjoy
   c. what type of entertainment they enjoy
   d. what their economic goals are for the future

4. Have the students commit themselves to spend about a week living only with those luxury items which are in no way endangering our environment. (For example, walking to a friend's instead of telephoning, giving up television or the movies, fishing instead of boating, etc.)

5. Do the same thing in the classroom. Spend some leisure time outdoors.

6. Assemble the class at the end of the time period to discuss the results.

7. Have the students write another descriptive paper stating what their economic goals may be for the future.

DISCUSSION QUESTIONS

1. How did you feel about your commitment?

2. Do you think you accomplished anything in the area of conservation?

3. What did you conserve?

4. What effect did this conservation have on your life?

5. Did you enjoy your new leisure activities? Why or why not?

6. Will this have any effects on the future? What will they be?

CHART II

| | Luxury Item | Resources Needed | Effects on Environment |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |



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OPTION #3

MATERIALS AND RESOURCES

Eco-problems, Part I, FS/C Man, An Ecological Approach, Educational Design Inc.

PROCEDURE:

1. Show the filmstrip.
2. Spend time discussing the points dealing with the changes over time.
3. Assign student groups to countries.
4. Have them research the economic/ecological background of the country using the following questions:
   a. What do they produce?
   b. What do they import and export?
   c. What machinery do they use to produce their goods?
   d. What goods are necessary for their existence within their country?
   e. What effects has technology had on their environment/culture?
   f. What are some of their resources?
5. After the research is completed, list on the blackboard the economic needs of the people of the countries.
6. Have the students list their own economic needs and compare them.

DISCUSSION QUESTIONS

1. What impressed you most about the country's way of life?
2. What seems to be important to these people?
3. What are some of the technological advancements these people have?
4. What is necessary to meet the needs of the people?
5. What resources are needed?
6. What environmental qualities, if any, have been sacrified?
7. How do their economic needs compare to your own needs?